proximal ring part **5** and is held in place between the base **510** and the inner proximal ring part **5** when the base **510** is fitted.

The devices of FIGS. **51** and **52** are particularly advantageous as the proximal end of the sleeve **402** that is generated when the sleeve **402** is pulled upwardly to retract an incision is removed from the field of use.

Referring to FIG. **53** there is illustrated an instrument access device **701** according to the invention which in this case comprises three instrument insertion sealing devices according to the invention. The access device **701** comprises a first instrument insertion device **702**, a second instrument insertion device **703**, and a third instrument insertion device **704**. The access device also has two insufflation/desufflation ports **706**, **707**.

The first instrument insertion device is illustrated particularly in FIGS. **54** to **59** and is shown, in use, in FIGS. **63**(*a*) to **63**(*c*). The insertion device **702** comprises a lipseal **710** through which an instrument **711** is insertable and a second seal member **712** having a passageway **713** extending therethrough, through which the instrument **711** is insertable. The first insertion device also has a reducer cap **715** which has a further lipseal **716** which is smaller than the lipseal **710**. To insert large diameter instruments, the cap **715** is removed (FIGS. **54**, **56**). To insert smaller diameter instruments the cap **715** is in place (FIG. **55**).

The second seal member **712** in this case comprises a duckbill valve through which the instrument **711** passes. The duckbill valve **712** provides sealing engagement with the instrument shaft whilst accommodating lateral movement of the instrument as illustrated in FIGS. **63**(*a*) to **63**(*c*).

The lipseal valve **710** is located proximally of the duckbill valve **712** so that a double seal is provided to substantially prevent leakage of insufflation gas.

The second and third instrument insertion devices **703**, **704** may be of the same construction as that of the first instrument insertion device **702**.

The instrument access device of the invention is suitable for use during laparoscopic surgery to facilitate instrument access to an insufflated abdominal cavity while maintaining pneumoperitoneum.

The instrument access device of the invention comprises a first connector sleeve **720** for connecting the first seal assembly **702** to a connector base **725**, a second connector sleeve **721** for connecting the second seal assembly **703** to the base **725**, and a third connector sleeve **722** for connecting the third seal assembly **704** to the base **725**.

The base **725** is mounted to a proximal ring assembly **726** of a retractor which includes a sleeve **727** which in this case extends in two layers between a distal anchoring ring (not shown) and the proximal ring assembly **726**. One such retractor is described in our US 2005-0090717A, the entire contents of which are incorporated herein by reference.

The instrument seals **702**, **703**, **704** are arranged in sealing relationship to a body of a patient, in use. The instrument seals **702**, **703**, **704** are spaced proximally of the proximal ring assembly **726**.

The connector sleeves **720**, **721**, **722** connect the proximal ring assembly **726** to the instrument seals **702**, **703**, **704**. The connector sleeves **720**, **721**, **722** are of a laterally flexible and longitudinally rigid material. In one case the connector sleeves **720**, **721**, **722** are of a rubber-like material, such as polyurethane.

In use, a wound opening is created in a tissue wall, and the distal anchoring ring is inserted through the wound opening into the wound interior. The proximal ring assembly **726** is located externally of the wound opening, with the retractor member extending proximally from the distal anchoring member through the wound opening. The second end of the retractor member is pulled proximally relative to the proximal ring assembly **726** to retract laterally the sides of the wound opening. Instruments may then be inserted through the instrument seals **702**, **703**, **704**, extended through the connector sleeves **720**, **721**, **722**, and extended through the retracted wound opening and into the wound interior.

The lipseal **710** may be of any suitable material. For example, it may be of an elastomeric material, a foam type material or a gelatinous material. The duckbill valve **712** may be of any suitable material. For example, it may be of a flexible polymeric material.

A lipseal valve **710** may also be used in combination with a block **740** of a gelatinous material to provide a second seal (FIG. **58**).

Referring to FIGS. **59** to **62**, for improved gas tightness the lipseal valve **710** may additionally be provided with a distal sealing flap. In one case (FIG. **60**) a sealing flap **741** is integral with the valve **710**. In another case (FIG. **61**) a sealing flap **742** is mounted to the distal end of the valve **710** using any suitable mounting such as adhesive and/or mechanical fixing. In a further case (FIG. **62**) a sealing flap **743** is fixed to a valve housing **744** using any suitable fixing. The use of such flaps may enhance the sealing of the valve assembly to an instrument passing therethrough.

Various features of the invention are described and illustrated. It will be appreciated that at least some of the features described in relation to one embodiment may be used not only in the embodiment specifically described but also in other appropriate embodiments.

The invention is not limited to the embodiments hereinbefore described, with reference to the accompanying drawings, which may be varied in construction and detail.

The invention claimed is:

1. An instrument access device, comprising:

a wound retractor, including:

a proximal member,

a distal member, and

a retractor sleeve extending proximally from the distal member toward the proximal member for retracting laterally the sides of a wound opening, wherein the retractor sleeve is configured such that the retraction is applied by shortening an axial extent of the retractor member between the proximal member and the distal member;

a cap removably coupled to the wound retractor; and

at least one instrument seal assembly removably coupled to the cap, the at least one instrument seal assembly including:

a distal end including a flange and a distally extending taper,

a proximal end, at least a portion of the proximal end being wider than a widest part of the flange, and

an intermediate portion extending between the flange and the portion of the proximal end, the intermediate portion having a narrower width than each of the widest part of the flange and the portion of the proximal end, wherein the intermediate portion contacts the cap for removably coupling the at least one instrument seal assembly to the cap.

2. The instrument access device of claim **1**, wherein the distally extending taper extends distally from the flange toward a distalmost end of the at least one instrument seal assembly.

3. The instrument access device of claim **1**, wherein the flange includes a proximally facing surface.